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**Notes:**

1. Untranslatable words are replaced with asterisks (\*\*\*).
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**CLAIM + DETAILED DESCRIPTION**

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**[Claim(s)]**

[Claim 1] The coloring cosmetics paints characterized by covering with the metal oxide gel containing a pigment the surface of the inorganic base material which has a smooth side.

[Claim 2] The coloring cosmetics paints characterized by covering the surface of a spherical inorganic base material with the metal oxide gel containing a pigment.

[Claim 3] The coloring cosmetics paints characterized by metal oxide gel according to claim 1 or 2 generating with a sol-gel method from the start solution containing metal ARUKOKISHIDO, water, acid, and alcohol.

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**[Detailed Description of the Invention]****[0001]**

[Industrial Application] This invention relates to the cosmetics paints which covered the pigment on the surface of a base material with metal oxide gel using cosmetics paints and its production method, especially a sol-gel method, and its production method.

**[0002]**

[Description of the Prior Art] Generally, cosmetics paints are included in cosmetics, such as face powder, foundation, eye shadow, a teak color, and a lipstick, and the color of all tones can be directed now.

[0003] Usually, the base materials of cosmetics paints are the mica which has a smooth side other than mineral inorganic pigments, such as titanium oxide, iron oxide, a zinc oxide, and ultramarine, and has a white transparent feeling, mica titanium which covered this with the metal oxide, etc. Here, the metal oxides of metal oxide covering mica are titanium, JIRUKONIUMU, aluminum, iron, chromium, etc. In addition, metal oxide covering mica is widely used as what is called pearl gloss paints.

[0004] Although the pigment was made to adhere to an inorganic base material conventionally, it is at recent years, When coating these inorganic base materials with a pigment, making a pigment adhere to an inorganic base material, or mixing silica and a pigment by a mechanochemical technique using an organic binder, and making this mixture adhere to an inorganic base material in a wet type is proposed.

**[0005]**

[Problem(s) to be Solved by the Invention] However, since silica was not covered by the whole paints surface, the pigment had exposed everywhere the cosmetics paints manufactured by the above-mentioned method. Skin stimulativeness may be risen by the chemical action by the thing which, on the other hand, has skin stimulativeness weak in itself in a pigment, ultraviolet rays, etc.

[0006] Therefore, when this exposed pigment touched the direct skin at the time of makeup, there was a possibility that some men might start a skin stimulus reaction and allergy sensitization.

[0007] This invention is made in view of the above-mentioned conventional technical problem, and the purpose is to offer the cosmetics paints coated so that a pigment might not be exposed

to the surface, and its production method.

[0008]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the cosmetics paints concerning the Claim 1 description are characterized by covering with the metal oxide gel containing a pigment the surface of the inorganic base material which has a smooth side.

[0009] Moreover, the cosmetics paints concerning the Claim 2 description are characterized by covering the surface of a spherical inorganic base material with the metal oxide gel containing a pigment.

[0010] Moreover, the cosmetics paints concerning the Claim 3 description are characterized by metal oxide gel according to claim 1 or 2 generating with a sol-gel method from the start solution containing metal ARUKOKISHIDO, water, acid, and alcohol.

[0011] Here, inorganic base materials are the mica which has a smooth side other than mineral inorganic pigments, such as titanium oxide, iron oxide, a zinc oxide, and ultramarine, and has a white transparent feeling, mica titanium which covered this with the metal oxide, etc.

[0012] In addition, the mica generally used by cosmetics is the mica (mica) which is white mica powder, and mica titanium is mainly used as metal oxide covering mica.

[0013] As for the diameter of 10 micrometers - 30 micrometers, and a spherical inorganic base material, about 1-5 micrometers (1 micrometer - about 100 micrometers) (0.1 micrometer - 30 micrometers) are [ the size of mica or metal oxide covering mica ] preferably good preferably.

[0014] In addition, the inorganic base material which has a smooth side should just be an inorganic base material with which it does not restrict to the above-mentioned mica or metal oxide leather \*\*\*\*\*, it is processed, and a smooth side is acquired. Moreover, as for the size of the base material, it is desirable that it is the same as that of the above-mentioned mica.

[0015] Moreover, as for the film thickness of the coat of the metal oxide gel containing a pigment, 0.05 micrometers or more are desirable. A pigment may be exposed when film thickness is less than 0.05 micrometer.

[0016] Metal oxide gel consists of metal ARUKOKISHIDO, water, acid, and alcohol.

[0017] First, generally metal ARUKOKISHIDO is  $M(OR)_n$ . It is expressed (M: metallic elements, OR:alkoxyl group, the number of oxidization of n:metallic elements). as the typical thing of this metal ARUKOKISHIDO —  $Si(OR)_4$  independent [ in things, such as Zn, Ti, aluminum and Fe, and Zr, / by each purpose ] besides Si, although mentioned — or it can mix and use. For example, what is necessary is just to use Zr that what is necessary is just to use Zn or Ti, to make reactivity high, when intensity and alkali-proof improvement are required.

[0018]  $Si(OR)_4$  \*\*\*\*\* —  $Si(OCH_3)_4$ ,  $Si(OC_2H_5)_4$  (tetra-ethoxy SHIRAN),  $Si(iso-OC_3H_7)_4$ ,  $Si(tert-OC_4H_9)_4$ , and  $Si(sec-OC_4H_9)_4$  etc. — it is mentioned.

[0019]  $Ti(OR)_4$  \*\*\*\*\* —  $Ti(OCH_3)_4$ ,  $Ti(OC_2H_5)_4$ ,  $Ti(iso-OC_3H_7)_4$ , and  $Ti(OC_4H_9)_4$  etc. — it is mentioned.

[0020]  $aluminum(OR)_3$  \*\*\*\*\* —  $aluminum(OCH_3)_3$ ,  $aluminum(OC_2H_5)_3$ ,  $aluminum(iso-OC_3H_7)_3$ , and  $aluminum(OC_4H_9)_3$  etc. — it is mentioned.

[0021]  $Zr(OR)_4$  \*\*\*\*\* —  $Zr(OCH_3)_4$ ,  $Zr(OC_2H_5)_4$ ,  $Zr(iso-OC_3H_7)_4$ , and  $Zr(OC_4H_9)_4$  etc. — it is mentioned.

[0022] Moreover, as alcohol which is a solvent, the alcohol of 1-5 has a desirable carbon number, for example, methanol, ethanol, propanol, butanol, pen TANORU, etc. are mentioned. In addition, you may use ethylene glucohol, ethylene OKOSHIDO, triethanol amine, xylene, etc. which dissolve metallic compounds.

[0023] Moreover, as acid used as a catalyst of hydrolysis, chloride, sulfuric acid, nitric acid, acetic acid, etc. are mentioned, for example.

[0024] The following chemical reaction has occurred in the sol-gel method.

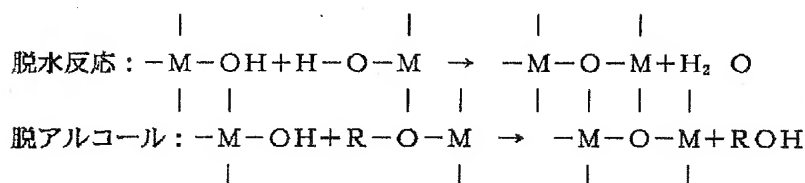
[0025]

[Formula 1]

Hydrolysis:  $M(OR)_4 + xH_2O \rightarrow M(OH)_x$  The next polymerization reaction occurs easily with  $(OR)_n - x + xROH$  hydrolysis.

[0026]

[Formula 2]



Therefore,  $\text{Si}(\text{OC}_2\text{H}_5)_4$  A case is hydrolysis first and is  $\text{Si}(\text{OH})_4$ .  $\text{Si}(\text{OH})_4$  which changes and is rich in this reactivity  $\text{SiO}_2$  with which it polymerized and  $-\text{Si}-\text{O}-\text{Si}-$  was connected. It becomes a solid.

[0027] Moreover, as a pigment which contains in metal oxide gel and with which an inorganic base material is coated, when it adds in metal ARUKOKISHIDO content alcoholic solution, the inorganic pigment and organic color which are distributed uniformly are suitable.

[0028] As an inorganic pigment, iron oxide, such as yellow oxide of iron ( $\text{FeO}(\text{OH})$ ), red iron oxide ( $\text{Fe}_2\text{O}_3$ , red ocher), and black oxide of iron ( $\text{Fe}_2\text{O}_4$ ), sulfur, aluminum silicate, ultramarine, a zinc oxide, and titanium oxide are mentioned.

[0029] The rake-sized paints are used as an organic color, and Litholrubin B (red No. 202) Lake red CBA (red No. 204), the HERIN boss pink CN (red No. 226), A bench gin orange G (orange 204) number, the bench gin yellow G (yellow No. 205) Brilliant fast Scarlett (red No. 404), permanent red F5R (red No. 405), a HANZA orange (orange No. 401), HANZA yellow (yellow No. 401), copper phthalocyanine blue (blue No. 404), etc. are mentioned.

[0030] Moreover, to metal ARUKOKISHIDO, preferably, 0.01–20wt.% addition of an inorganic pigment or an organic color is done, and, as for 3–10wt.% addition, it is made more desirable. Manufacture will become difficult, if the coloring effect is lost and 20% is exceeded, when the amount of addition is less than 0.01%.

[0031]

[Function] Since the pigment is included in the metal oxide gel which is a coating film according to this invention, cosmetics paints do not touch the direct skin. For this reason, there is no possibility of causing the skin stimulus by a thing as a result of the chemical reaction of the skin stimulus by paints or pigments, and ultraviolet rays.

[0032] moreover, a pigment — half — since it is included by transparent metal oxide gel, coloring which resembles the textures of skin and has a natural transparent feeling is obtained.

[0033] furthermore — since the pigment is included by metal oxide gel — sweat and leather fat — getting wet — there is almost no color change (color dullness, carrying out a color \*\*\*\*).

[0034]

[Example] Next, a work example and a comparative example are given and this invention is explained concretely.

[0035] The work-example 1 paints (red ocher) 25.0 superposition part, the dispersing agent (made by the "ethocell" Dow Chemical [Co.] Co. (ethyl cellulose)) 4.0 superposition part, and the solvent (isopropyl alcohol) 71.0 superposition part were mixed, distributed processing was carried out for 10 minutes using the distributed machine, and pigment dispersion liquid was prepared.

[0036] Next, DETORA ethoxy SHIRAN 5.2g, isopropyl alcohol 62.7g, 1.1g of water, 1.0g of concentrated nitric acid, and 5.0g of the above-mentioned pigment dispersion liquid were mixed, it agitated in normal temperature for 2 hours, and coating liquid (75.0g) was obtained.

[0037] After checking that Mica 25.0g was filled with the whole quantity (75.0g) of the coating liquid obtained in the work-example 2 work example 1, it agitated well, and the mica surface has fully been covered with liquid, temperature is gradually raised from room temperature, it keeps at 60 degrees C, the whole is dried, and a coloring gel layer is formed. In addition, temperature was raised, and it was made around 150 degrees C, and was neglected for 1 hour, the coloring gel layer was stuck to the mica surface, and red ocher silica processing mica was obtained.

[0038] Work examples 9, 10, and 13 were presented with the red ocher silica processing mica obtained in this way.

[0039] By the same method as work-example 3 work example 1, paints were changed and

coating liquid was adjusted.

[0040] The paints used = the coating liquid obtained in the yellow-oxide-of-iron work-example 4 work example 3 was used, mica processing was performed by the same method as a work example 2, and yellow-oxide-of-iron silica processing mica was obtained.

[0041] Work examples 9, 10, 11, 12, and 13 were presented with the yellow-oxide-of-iron silica processing mica obtained in this way.

[0042] The work-example 5 paints (red No. 226) 6.0 superposition part, the dispersing agent (made by "Goh Serryn L-301" Japan Composition company" (polyvinyl alcohol)) 4.0 superposition part, and the solvent (ethyl alcohol) 90.0 superposition part were mixed, distributed processing was carried out for 10 minutes using the distributed machine, and pigment dispersion liquid was prepared. *tetraethoxy silane*

[0043] Next, tetra-ethoxy SHIRAN 3.0g, ethyl alcohol 56.0g, 3.0g of water, 0.5g of concentrated hydrochloric acid, and 12.5g of the above-mentioned pigment dispersion liquid were mixed, it agitated in normal temperature for 2 hours, and coating liquid (75.0g) was obtained.

[0044] Mica titanium 25.0g was filled with the whole quantity (75.0g) of the coating liquid obtained in the work-example 6 work example 5, the same processing as a work example 2 was performed, and red No. 226 silica processing mica titanium was obtained.

[0045] Work examples 12 and 13 were presented with the red No. 226 silica processing mica titanium obtained in this way.

[0046] By the same method as work-example 7 work example 5, paints were changed and coating liquid was prepared.

[0047] The paints used = yellow No. 205

Mica titanium 25.0g was filled with the whole quantity (75.0g) of the coating liquid obtained in the work-example 8 work example 6, the same processing as a work example 2 was performed, and yellow No. 205 silica processing mica titanium was obtained.

[0048] The work example 11 was presented with the yellow No. 205 silica processing mica titanium obtained in this way. From these results, it became clear that the cosmetics paints of this invention did not have a skin stimulus. Next, the suitable example of combination of the cosmetics using the cosmetics paints concerning this invention is shown below.

Homogeneous mixing of the 13 ingredients of the work-example 9 following was carried out, and "100g of face powder" was prepared.

[0049]

1. Talc 78.55G 2. Stearic Acid Magnesium 3.00G 3. Nylon Powder 2.00G 4. Silk Powder 1.00G 5. Methylpolysiloxane 1.70G 6. Squalane 0.30G 3.00G of 7. Titanium Oxide 8. 2.00G of Particulate Titanium Oxide 9. Red Ocher / Talc (50%) \*10.25G10. Yellow-Oxide-of-Iron / Talc (50%) 0.50G11. Black-Oxide-of-Iron / Talc (50%) 0.20G12. Red Ocher Silica Processing Mica 2.50g13. yellow-oxide-of-iron silica processing mica 5.00g 100g of whole quantity Red ocher is 50% to the quantity of \*1 talc.

[0050] The following displays also apply above.

[0051] Homogeneous mixing of the 17 ingredients of the work-example 10 following was carried out, and "100g of foundations" was prepared.

1. Talc 31.10G 2. Auction Site 20.00G 3. 12.00G of Titanium Oxide 4. Mica Titanium 1.00G 5. 5.00G of Barium Sulfate 6. Nylon Powder 2.00G 7. Silk Powder 1.00G 8. Methylpolysiloxane 9.50G 9. Squalane 0.50G10. OKUCHIRUDODEKANORU 3.00G11. Butyl Parahydroxybenzoate 0.20g12. vitamin E 0.20g13. red ocher / talc (50%) The 0.50g14. yellow-oxide-of-iron / talc (50%) 1.50g15. black-oxide-of-iron / talc (50%) 0.50g16. red ocher silica processing mica 4.00g17. yellow-oxide-of-iron silica processing mica 8.00g Carry out homogeneous mixing of the 16 ingredients of the 100g of whole-quantity work-example 11 following. "100g of eye shadows" was prepared.

[0052]

1. Talc 26.20G 6.00G of 2. Poly Methyl Methacrylate 3. Mica Titanium 30.00G 4. Collagen Processing Auction Site 0.30G 5. Methylpolysiloxane 9.00G 6. Squalane 0.20G 2.00G of 7. Jojoba Oil 8. Octanoic Acid Sept Iles 1.50G 0.20G of 9. JIISO Stearic Acid Diglyceryl 2.00G10. Vitamin-E 11. PARAOKISHI Benzoic Ester 0.10g12. red ocher / talc (50%) 7.50g14. ultramarine / talc 5.00g13. black oxide of iron / talc (50%) (50%) 3.00g15. red 226 No. silica processing mica titanium

3.00g16. yellow No. 205 silica processing mica titanium 4.00g Carry out homogeneous mixing of the 17 ingredients of the 100g of whole-quantity work-example 12 following. "100g of teak colors" was prepared.

[0053]

1. Talc 43.00G 2. Nylon Powder 10.00G 3. Auction Site 9.00G 4. Mica 8.00G 5. 1.00G of Titanium Oxide 6. Mica Titanium 5.00G 7. Stearic Acid Magnesium 2.00G 8. Collagen Processing Auction Site 0.20G 9. Methylpolisiloxane 2.00G10. Squalane 1.00G11. Jojoba Oil 2.00g12. octanoic acid Sept Iles 1.50g13. vitamin E 0.20g14. PARAOKISHI benzoic ester 0.10g12. carmine / talc (50%) 2.00g15. yellow-oxide-of-iron silica processing mica 5.00g16. red No. 226 silica processing mica titanium 8.00g It cools, after carrying out the heating dissolution and carrying out uniform distribution of the 17 ingredients of the 100g of whole-quantity work-example 13 following. "100g of lipsticks" was prepared.

[0054]

1. Carnauba Wax 2.00G 2. Ceret Singh 10.00G 3. Candelilla Low 7.00G 4. Microcrystalline Wax 2.00G 5. Liquefied Lanolin 15.00G 6. Bird Isostearic Acid Diglycerol 10.00G 7. Squalane 1.00G 17.00G of 8. Malate Diisostearyl 4.00G of 9. Bird Octanoic Acid GURISERIRU 12.60G10. Methylpolisiloxane 1.00G11. Liquid Paraffin 12. Barium Sulfate 1.00g13. titanium oxide 1.80g14. safflower red 0.10g15. red ochre silica processing mica 3.00g15. yellow-oxide-of-iron silica processing mica 1.50g16. red No. 226 silica processing mica titanium 9.00g Each combination composition of the whole-quantity 100g above of dispersibility, the adhesion characteristic, and mobility was good. Moreover, separation or deterioration of a combination ingredient were not generated.

[0055]

[Effect of the Invention] As mentioned above, since the pigment is included in the metal oxide gel which is a coating film concerning this invention, cosmetics paints do not touch the direct skin. For this reason, there is no possibility of causing the skin stimulus by a thing as a result of the chemical reaction of the skin stimulus by paints or pigments, and ultraviolet rays. Therefore, the high cosmetics of the safety which does not produce allergic dermatitis can be offered.

[0056] moreover, a pigment -- half-- since it is included by transparent metal oxide gel, coloring which resembles the textures of skin and has a natural transparent feeling is obtained.

[0057] furthermore -- since the pigment is included by metal oxide gel -- sweat and leather fat -- getting wet -- there is almost no color change (color dullness, carrying out a color \*\*\*). Therefore, makeup \*\*\*\* carries out forever.

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[Translation done.]